

## CLINICAL STUDY

## Reliability and validity of dermatology life quality index: assessment of quality of life in human immunodeficiency virus/acquired immunodeficiency syndrome patients with pruritic papular eruption

Zhibin Liu, Zheng Xie, Li Zhang, Yantao Jin, Huijun Guo, Ziqiang Jiang, Xiumin Chen, Jun Yuan

**Zhibin Liu**, Department of Acquired Immune Deficiency Syndrome Treatment and Research Center, the First Affiliated Hospital of Henan University of Traditional Chinese Medicine, Zhengzhou, 450000, China; Key Laboratory of Viral Diseases Prevention and Treatment of Traditional Chinese Medicine of Henan Province, Zhengzhou 450000, China

**Zheng Xie, Li Zhang, Yantao Jin, Huijun Guo, Ziqiang Jiang, Xiumin Chen, Jun Yuan**, Department of Acquired Immune Deficiency Syndrome Treatment and Research Center, the First Affiliated Hospital of Henan University of Traditional Chinese Medicine, Zhengzhou 450000, China

**Supported by** the National Special S & T Program on Major Infectious Diseases (No. 2008ZX10005-003, No. 2012ZX10004905-003-003) and Innovation Scientists and Technicians Troop Construction Projects of Zhengzhou City (No. 10CXTD140)

**Correspondence to: Associate Prof. Zhibin Liu**, Department of Acquired Immune Deficiency Syndrome Treatment and Research Center, the First Affiliated Hospital of Henan University of Traditional Chinese Medicine, Zhengzhou 450000, China; Key Laboratory of Viral Diseases Prevention and Treatment of Traditional Chinese Medicine of Henan Province, Zhengzhou 450000, China. [drzbncn@163.com](mailto:drzbncn@163.com)

**Telephone:** +86-371-66264858

**Accepted:** March 11, 2013

DLQI was carried out in Henan province, China. The reliability and validity were tested by means of statistical method. Data were processed with SPSS 19.0.

**RESULTS:** One hundred and seven subjects participated in the study and 106 (99.07%) finished the questionnaire. Eighteen patients were mildly affected; 62 were moderately affected, 24 were highly affected, and 2 were extremely affected. Reliability analysis showed that the split-half reliability coefficient of questionnaire was 0.556 and the reliability of the full test estimated with Spearman-Brown correction was 0.7146. The Cronbach alpha was 0.673. According to validity analysis, the correlation between the scores of items and the total scores ranged from 0.208 to 0.529 ( $P < 0.05$ ). Three factors were abstracted from 10 questions with the principal component analysis and the contribution rate of the 3 common factors was 59.95%.

**CONCLUSION:** The simplified-Chinese-version DIQL is an acceptable and valid scale for HIV/AIDS patients with PPE. It can be used to evaluate the QoL of HIV/AIDS patients with PPE in China.

© 2013 JTCM. All rights reserved.

**Key words:** Quality of life; Dermatology; HIV; Acquired immunodeficiency syndrome; Pruritic papular eruption

## INTRODUCTION

Acquired immunodeficiency syndrome (AIDS), caused

## Abstract

**OBJECTIVE:** To test the reliability and validity of dermatology life quality index (DLQI) in simplified Chinese language by assessing the quality of life (QoL) in HIV (human immunodeficiency virus)/AIDS (Acquired immunodeficiency syndrome) patients with pruritic papular eruption (PPE).

**METHODS:** A study of simplified-Chinese-version

by the human immunodeficiency virus (HIV), has become a major public health issue in China. Since 1985, the first Chinese HIV/AIDS case was reported in Peking Union Medical College Hospital.<sup>1</sup> It was estimated that by the end of 2011, there were approximately 780 000 HIV-1 positive patients in China, including about 154 000 AIDS patients and about 48 000 new HIV-infected patients in 2011.<sup>2</sup>

Fortunately, along with the development of combined antiretroviral therapy (cART) and prevention, the mortality and morbidity of HIV/AIDS were declined remarkably, and it is well known that HIV/AIDS has become a chronic and potentially manageable disease.<sup>3</sup>

At present, more attention was paid not only to the antiviral treatment, e.g. the recovery of immune function, reducing of infection complications, decrease of viral loads, side-effects and resistance of cART, but also to the quality of life (QoL) of AIDS patients. QoL as a multidimensional concept with cultural, social, psychological and health dimensions, is believed to be a good measure of health status.<sup>4</sup>

In 1994, the dermatology life quality index (DLQI)<sup>5</sup> was developed by Finlay and Khan, which was designed to measure the impact of skin conditions on QoL. It has been a widely used questionnaire for life quality assessment and translated into 85 languages including simplified Chinese version and used in over 33 skin conditions.

DLQI has been used in China for years in various conditions except pruritic papular eruption (PPE). However no studies were reported on the assessment of PPE with DLQI. In this article, we reported our study on the reliability and validity of DLQI by assessing the condition.

## METHODS

### Subjects

This study, a part work of the project funded by National Special S & T Program on Major Infectious Diseases, was carried out from May to June 2010 in Shangcai county of Henan province. Inclusion criteria: the subjects aged over 18 years and voluntarily participated in the study and signed the informed consent form; they had been diagnosed with HIV/AIDS according to the guidelines for diagnosis and treatment of HIV/AIDS in China (2005)<sup>6</sup> and the PPE according to the itching, sporadic, papule or nodules as the main type of skin rash for more than 1-month duration by two clinical doctors; the PPE had not been treated in the last two weeks.

Exclusion criteria: patients with psychiatric diseases including serious hysteria; pregnant or lactating patients; subjects prepared to be pregnant; any diseases which could affect test results according to the researchers' judgment.

### Demographics

Demographics included age, gender, marital status, education, occupation, cART time and obstetrical history.

### DLQI

It is a questionnaire with 10 questions involving in symptoms and feelings, daily activities, leisure, work and school, personal relationships and treatment. The scores ranged from 0 to 30. The higher the score, the worse the QoL. The scores of 0 to 1 indicated no effect at all on patient's life, 2 to 5 mild effect, 6 to 10 moderate effect, 11 to 20 high effect and 21 to 30 extremely high effect.

### Survey method

Interviewers had been trained strictly before conducting the survey. A unified cases report form was used to be filled out on the scene by the interviewers or by the subjects.

### Statistical analyses

Data were analyzed with SPSS 19.0 software package (SPSS Inc., Chicago, IL, USA). Spearman correlation coefficients were calculated for item scores and total scores. We used reliability analysis with Cronbach alpha for internal consistency evaluation and factor analysis for structure validity evaluation. Statistical significance was accepted as  $P < 0.05$ .

### Ethical consideration

Ethical approval was obtained from the Institutional Review Board of the First Affiliated Hospital of Henan University of TCM. Written informed consent was obtained from each subject before recruited in the study.

## RESULTS

### Demographics

One hundred and seven subjects participated in the survey and 106 (99.07%) patients finished the questionnaire. Among them, 38 (35.85%) males and 68 (64.15%) females aged from 32 to 64 years old, and the average age was  $48 \pm 8$ . Forty (37.74%) patients were illiterate and 23 (21.70%) patients graduated from middle school. Eighty (75.47%) patients married and 26 (24.53%) patients were in divorced, widowed or single status.

### DLQI scores

Among 106 patients, the total scores of six domains were 914, the mean was 8.62. The maximum scores were 24 and the minimum scores were 3. Eighteen patients were mildly affected; 62 moderately affected; 24 highly affected; 2 extremely affected.

### Reliability

Reliability analysis showed that the split-half reliability coefficient of questionnaire was 0.556 and the reliability

ty estimated for the full test with Spearman-Brown correction was 0.7146. The Cronbach alpha was 0.673. Cronbach alpha reliability coefficients for the six dimensions (Symptoms and feelings, Daily activities, Leisure, Work and School, Personal relationships and Treatment) were 0.633, 0.777, 0.771, 0.785, 0.772 and 0.684 respectively.

### Content validity

The correlations between the scores of items and the total scores ranged from 0.208 to 0.529 ( $P < 0.05$ ). Exploratory factor analysis was used to check structure validity, Kaiser-Meyer-Olkin (KMO) value was 0.673 and Bartlett test result was 254.69 ( $P < 0.001$ ). Three common factors were abstracted from 10 questions by the principal component analysis. The contribution rate of the 3 common factors was 59.95%. Among the 3 common factors, factor 1 included Question 4-10, factor 2 includes Question 1-4, and factor 3 includes Question 4, 5 and 9.

## DISCUSSION

PPE is the most common cutaneous manifestation among HIV/AIDS patients,<sup>7</sup> with a prevalence ranging from 11% to 46% depending on the geographic area.<sup>8</sup> In China, reported researches on PPE among HIV/AIDS were few. The incidence of PPE is still unknown. Some researchers regarded PPE as good clinical indicator of advancing immune suppression,<sup>9</sup> even as the first marker of HIV infection with a high positive predictive value.<sup>10</sup>

At present, more consistent view is that the eruptions appear not only in the advanced immunosuppressive stage of the disease but also in the initial cutaneous disease of the HIV with high CD4 + T lymphocyte counts.<sup>11</sup> PPE has been observed for a few decades, but the etiology and the exact spectrum of PPE are still unclear.<sup>12</sup> Although varying therapeutic methods such as ultraviolet B rays, antihistamines and potent corticosteroids have been used in clinical practice, the effect is still not satisfactory.

At present, QoL indices are recognized as crucial outcome measures in therapeutic interventions for the limitations of the traditional assessment of medical and surgical outcomes. It is well known that some skin-diseases impact on patients' lives in terms of psychological well-being, social functioning and activities,<sup>13</sup> and assessment of QoL has become an important endpoint in clinical trials besides traditional clinical outcomes.<sup>14</sup> In order to evaluate QoL, some instruments had been formulated and used in past decades, e.g. SF-36,<sup>15</sup> HO-QoL-HIV<sup>16</sup> and QoL-index.<sup>17</sup> Some measurements of QoL have general applicability, but the others can only be used on a specific disease.

The disease specific instruments of QoL being the majority measurement tools have been used to measure

specific areas of health, functioning and QoL relevant to a particular disease and treatment, such as DLQI for skin disease, WHOQOL-HIV for HIV/AIDS and Cancer Related Fatigue Scale for fatigue among cancer patients.<sup>18</sup> Among those instruments, DLQI is widely used in skin diseases.<sup>19</sup>

In the past decade, the simplified-Chinese-version DLQI had been used in China.<sup>20</sup> It was proved an efficient instrument with better reliability and validity conducted on 215 patients.<sup>21</sup>

Although some researchers used the simplified-Chinese-version in some skin diseases including onychomycosis,<sup>22</sup> pemphigus and bullous pemphigoid,<sup>23</sup> vitiligo<sup>24</sup> and alopecia areata,<sup>25</sup> no study reported the results of assessing PPE of HIV/AIDS with DLQI and tested its reliability and validity.

Reliability analysis showed that the split-half reliability coefficient of questionnaire was 0.556 and the Spearman-Brown correction reliability was 0.7146, and Cronbach alpha reliability coefficient was 0.673. These revealed that the questionnaire had an acceptable internal consistency.

The correlation between the scores of items and the total scores ranged from 0.208 to 0.529 ( $P < 0.05$ ). The three common factors were derived from 10 questions by the principal component analysis with the contribution rate of 59.95%. This suggested that the questionnaire had acceptable construct validity.

In conclusion, the simplified-Chinese-version DLQI is a reliable and valid scale. It can be used to evaluate QoL of HIV/AIDS patients with PPE in China.

## ACKNOWLEDGEMENTS

We all are grateful to the HIV/AIDS patients for taking part in our study and government for funding this study. The findings and conclusions of this article are those of the authors and do not represent the Views of the founders.

There was no other thing should be declared.

## REFERENCES

- 1 Bureau of hygiene and tropical diseases. Weekly epidemiological record. AIDS Newsletter 1986; 61(29): 6.
- 2 State Council AIDS Working Committee Office, United Nations Theme Group on AIDS in China. A joint assessment of HIV/AIDS prevention, treatment and care in China. Beijing: Ministry of Health, 2007: 1-7.
- 3 Campos LN, César CC, Guimarães MDC. Quality of life among HIV-infected patients in Brazil after initiation of treatment. Clinics (Sao Paulo) 2009; 64(9): 867-875.
- 4 Garretsen HFL, Van Gilst ECH, Van Oers HAM. Collecting health information at a local level. Health Promot Interv 1991; 6(2): 121-133.
- 5 Finlay AY, Khan GK. Dermatology life quality index (DLQI)-a simple practical measure for routine clinical use.

- Clin Exp Dermatol 1994; 19(3): 210-216.
- 6 Chinese Medical Association and Chinese Center for Disease Control and Prevention. Guidelines for diagnosis and treatment of HIV/AIDS in China (2005). Chin Med J (Engl) 2006; 119(19): 1589-1608.
- 7 **Yahya H.** Change in pattern of skin disease in Kaduna, north-central Nigeria. Int J Dermatol 2007; 46(9): 936-943.
- 8 **Resneck JS Jr,** Van Beek M, Furmanski L, et al. Etiology of pruritic papular eruption with HIV infection in Uganda. JAMA 2004; 292(21): 2614-2621.
- 9 **Lakshmi SJ,** Rao GR, Rao KA, Prasad P, Kumar Y. Pruritic papular eruptions of HIV: a clinicopathologic and therapeutic study. Indian J Dermatol Venereol Leprol 2008; 74(5): 501-503.
- 10 **Colebunders R,** Mann JM, Francis H, et al. Generalized papular pruritic eruption in African patients with HIV infection. AIDS 1987; 1(2): 117-121.
- 11 **Liautaud B,** Pape JW, DeHovitz JA, et al. Pruritic skin lesions. A initial presentation of acquired immunodeficiency syndrome. Arch Dermatol 1989; 125(5): 629-632.
- 12 **Eisman S.** Pruritic papular eruptions of HIV-1. Dermatol Clin 2006; 24(4): 449-457.
- 13 **Tan X,** Feldman SR, Balkrishnan R. Quality of life issues and measurement in patients with psoriasis. Psoriasis: targets and therapy 2012; 2(1): 13-23.
- 14 **Menter A,** Augustin M, Signorovitch J, et al. The effect of adalimumab on reducing depression symptoms in patients with moderate to severe psoriasis: a randomized clinical trial. J Am Acad Dermatol 2010; 62(5): 812-818.
- 15 **Ware JJ,** Gandek B. Overview of the SF-36 health survey and the International Quality of Life Assessment (IQOLA) project. J Clin Epidemiol 1998; 51(11): 903-912.
- 16 WHOQOL HIV Group. WHOQOL-HIV for quality of life assessment among people living with HIV and AIDS: results from the field test. AIDS Care 2004; 16(7): 882-889.
- 17 **Spitzer WO,** Dobson AJ, Hall J, et al. Measuring the quality of life of cancer patients: a concise QL-index for use by physicians. J Chron Dis 1981; 34(12): 585-597.
- 18 **Gupta D,** Lis CG, Grutsch JF. The relationship between cancer-related fatigue and patient satisfaction with quality of life in cancer. J Pain Symptom Manage 2007; 34(1): 40-47.
- 19 **Bronsard V,** Paul C, Prey S, et al. What are the best outcome measures for assessing quality of life in plaque type psoriasis? A systematic review of the literature. JEADV 2010; 24(Suppl 2): 17-22.
- 20 **Yang HZ,** Wang K, Jin HZ, et al. Infliximab monotherapy for Chinese patients with moderate to severe plaque psoriasis: a randomized, double-blind, placebo-controlled multicenter trial. Chin Med J (Engl) 2012; 125(11): 1845-1851.
- 21 **Wang XL,** Zhao TE, Zhang XQ. Assessment on the reliability and validity of the dermatology life quality index in Chinses version. Zhong Hua Liu Xing Bing Xue Za Zhi 2004; 25(9): 791-793.
- 22 **Zhou ZL,** Zhang JP, Wang XM, Shao Q, Hu JY, Han QD. Compliance of the patients and related influential factors on the topical antifungal treatment of onychomycosis. Zhong Hua Liu Xing Bing Xue Za Zhi 2011; 32(7): 720-723.
- 23 **Quan Z,** Luo XQ, Huang HY, et al. Study on quality of life and influencing factors in patients with pemphigus and bullous pemphigoid. Chin J Derm Venereol 2010; 24(10): 928-923.
- 24 **Wang KY,** Wang KH, Zhang ZP. Health-related quality of life and marital quality of vitiligo patients in China. J Eur Acad Dermatol Venereol 2011; 25(4): 429-435.
- 25 **Zhou J,** Ding YF, Chu H, Yi XM, Lou W. Life quality and its influence factors in 107 cases of alopecia areata. Shanghai Yu Fang Yi Xue 2011; 23(2): 49-51.